IN THE CLAIMS:

The current claims follow. For claims not marked as amended in this response, any difference in the claims below and the previous state of the claims is unintentional and in the nature of a typographical error.

1. (Currently Amended) A method for integrated decision support, comprising the steps of:

receiving a plurality of decision inputs by a system having at least a hardware processor;

converting a first plurality of said received decision inputs to a plurality of graph representations by the system;

converting a second plurality of said received decision inputs to a plurality of mathematical representations by the system;

decomposing, by the system, said converted first plurality of said received decision inputs and said converted second plurality of said received decision inputs to a plurality of sub-problems;

detecting, by the system, a plurality of strongly-connected components associated with said plurality of sub-problems, each of said plurality of strongly-connected components representing a connection between at least two of said plurality of sub-problems; and

solving said plurality of sub-problems by the system.

2. (Original) The method of Claim 1, wherein the decomposing step further comprises the steps of:

performing dependency propagation for said plurality of sub-problems; and

placing said plurality of sub-problems in at least one predefined order for solution.

3. (Original) The method of Claim 1, wherein the detecting step comprises executing a graph-theoretic algorithm for a plurality of mathematical equations associated with said plurality of strongly-connected components to prevent over-constraining.

4. (Original) The method of Claim 1, wherein the decomposing step comprises decomposing said converted first plurality of said received decision inputs and said converted second plurality of said received decision inputs to a plurality of mathematical equations and algebraically solvable graph components.

5. (Previously Presented) The method of Claim 1, wherein the detecting step comprises detecting a plurality of coupled dependency relations within said plurality of sub-problems.

6. (Previously Presented) The method of Claim 1, wherein the detecting step comprises identifying a plurality of simultaneous equations within said plurality of sub-problems.

7. (Original) The method of Claim 1, wherein the solving step comprises solving a plurality of numerical sub-problems and a plurality of algebraic sub-problems.

8. (Original) The method of Claim 1, wherein said solving step comprises:

solving a plurality of numerical relations sub-problems with a numerical solution algorithm;

solving a plurality of geometric relations sub-problems with an algebraic solution algorithm; and

solving a plurality of logical relations sub-problems with a logical inference solution algorithm.

9. (Original) The method of Claim 1, wherein said plurality of decision inputs comprises at least one of:

a plurality of option selection parameters;

a plurality of equality relation parameters;

a plurality of dependency parameters;

a plurality of production rule parameters;

a plurality of logical relation parameters;

a plurality of inequality expression parameters; and

a plurality of geometric constraint parameters.

10. (Original) The method of Claim 1, wherein the solving step comprises solving a plurality of simultaneous equations with a Newton-Raphson algorithm or Modified GramSchmidt algorithm.

11. (Currently Amended) ~~Software for integrated decision support, the software being embodied in a~~ A computer-readable medium ~~and~~ storing software that when executed is operable to cause a processor to perform the steps of:

receive a plurality of decision inputs;

convert a first plurality of said received decision inputs to a plurality of graph representations;

convert a second plurality of said received decision inputs to a plurality of mathematical representations;

decompose said converted first plurality of said received decision inputs and said converted second plurality of said received decision inputs to a plurality of sub-problems; detect a plurality of strongly-connected components associated with said plurality of sub-problems, each of said plurality of strongly-connected components representing a connection between at least two of said plurality of sub-problems; and solve said plurality of sub-problems.

12. (Previously Presented) A computer-implemented system for integrated decision support, comprising:

a processor; and

a data storage device coupled to said processor, said processor operable to: receive a plurality of decision inputs;

convert a first plurality of said received decision inputs to a plurality of graph representations;

convert a second plurality of said received decision inputs to a plurality of mathematical representations;

decompose said converted first plurality of said received decision inputs and said converted second plurality of said received decision inputs to a plurality of sub-problems; detect a plurality of strongly-connected components associated with said plurality of sub-problems, each of said plurality of strongly-connected components representing a connection between at least two of said plurality of sub-problems; and

solve said plurality of sub-problems.

13. (Original) The system of Claim 12, wherein said processor is further operable to:

perform dependency propagation for said plurality of sub-problems; and

place said plurality of sub-problems in at least one predefined order for solution.

14. (Original) The system of Claim 12, wherein said processor is further operable to execute a graph-theoretic algorithm for a plurality of mathematical equations associated with said plurality of strongly-connected components to prevent over-constraining.

15. (Original) The system of Claim 12, wherein said processor is further operable to decompose said converted first plurality of said received decision inputs and said converted second plurality of said received decision inputs to a plurality of mathematical equations and algebraically solvable graph components.

16. (Previously Presented) The system of Claim 12, wherein said processor is further operable to detect a plurality of coupled dependency relations within said plurality of sub-problems.

17. (Previously Presented) The system of Claim 12, wherein said processor is further operable to identify a plurality of simultaneous equations within said plurality of subproblems.

18. (Original) The system of Claim 12, wherein said processor is further operable to solve a plurality of numerical sub-problems and a plurality of algebraic sub-problems.

19. (Original) The system of Claim 12, wherein said processor is further operable to:

solve a plurality of numerical relations sub-problems with a numerical solution algorithm;

solve a plurality of geometric relations sub-problems with an algebraic solution algorithm; and

solve a plurality of logical relations sub-problems with a logical inference solution algorithm.

20. (Original) The system of Claim 12, wherein said plurality of decision inputs comprises at least one of:

a plurality of option selection parameters;

a plurality of equality relation parameters;

a plurality of dependency parameters;

a plurality of production rule parameters;

a plurality of logical relation parameters;

a plurality of inequality expression parameters; and

a plurality of geometric constraint parameters.

21. (Original) The system of Claim 12, wherein said processor is further operable to solve a plurality of simultaneous equations with a Newton-Raphson algorithm or Modified Gram-Schmidt algorithm.

22. (Previously Presented) A system for integrated decision support, comprising:

means for receiving a plurality of decision inputs;

means for converting a first plurality of said received decision inputs to a plurality of graph representations;

means for converting a second plurality of said received decision inputs to a plurality of mathematical representations;

means for decomposing said converted first plurality of said received decision inputs and said converted second plurality of said received decision inputs to a plurality of sub-problems;

means for detecting a plurality of strongly-connected components associated with said plurality of sub-problems, each of said plurality of strongly-connected components representing a connection between at least two of said plurality of sub-problems; and

means for solving said plurality of sub-problems.